



# STRUCTURAL SPECIAL INSPECTIONS FORMS AND GUIDELINES

for

Natural Resource Research Center Addition  
Montana Tech of the UM  
Butte, MT

Statement of Special Inspections  
Seismic Quality Assurance  
Schedule of Special Inspections  
Final Report of Special Inspections



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# STRUCTURAL SPECIAL INSPECTIONS GUIDELINES

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## Introduction

In conjunction with the construction documents, the structural General notes and the specifications, this document will provide a basic understanding of the requirements for special inspections and how they relate to the Contractor, Owner and Designer. The 2009 International Building Code (IBC) provides a basis for the requirements for special inspections and this document will add to and supplement those requirements.

Three independent forms shall be submitted to the governing agency in which the permit is being acquired. The three forms are:

- The Statement of Special Inspections
- The Schedule of Special Inspection Services
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## Definitions:

The following definitions are in addition to the definitions given in Chapter 17 of the IBC.

**Special Inspection** is the reviewing of the workmanship of the Contractor and their employees and qualification of materials to ensure that the construction documents are followed as intended in design.

The **Special Inspector** (SI) can be the Structural Engineer of Record (SER), or another qualified member of the design team, except when under contract with the Contractor. See The Schedule of Special Inspection Services for qualifications. The Owner will select a qualified agent with the aid of the SER or by the SER's designated representative. Special inspections are *in addition* to structural observations by the SER.

**Structural observations** are visual observations of the structural system for general conformance to construction documents at significant construction stages. Structural observations will be performed by the SER, the SER's designated representative, or a Registered Structural Engineer. CTA will recommend observation on all projects, not just minimum requirements per IBC.

**Statement of Special Inspections** is a document provided by the SER that addresses any additional special inspection or testing for seismic or wind resistance as prescribed in IBC Section 1705. (A list of general special inspection requirements can be found in the structural general notes.) The owner and person in responsible charge of their preparation will sign this document and submit for review prior to the issuing of the Bid Documents.

**Schedule of Special Inspection Services** is an itemized list identifying special inspection activities, individual firms or agencies performing SI services, frequency of activity and special instructions or comments to perform inspections. For periodic inspections, frequency should be indicated. The design professional will identify which inspections apply to the project to be constructed. The schedule will be made readily available at the project site.

**Final Report of Special Inspections** will be submitted by each of the SIs to the Design Professional and the governing agency after special inspection requirements for their corresponding parts of the project have been fulfilled.

**Responsibilities:** These lists are a guideline and may not be all inclusive.

**Owner**

Pre-design Phase

- The Owner shall be aware of funds required in the budget to cover the special inspection requirements.

Pre-construction Phase

- Engage an independent firm for special inspections if Designer is not qualified or is not contracted to perform special inspections.
- Solicit proposals for Independent Testing Labs.
- Attend Pre-construction meeting.

**Architect**

Pre-design Phase

- Inquire of Owner procurement of special inspection services.
- Identify who will be performing the special inspection.
- Ensure all forms required are included in the contract documents.

Pre-construction Phase

- If special inspection is not under the Designer's contract, Architect will provide assistance in the selection of the Special Inspector.
- Facilitate Pre-construction Meeting.

Construction Phase

- Provide construction administration services as contracted under the design contract.

**Structural Engineer of Record**

Pre-design Phase

- Coordinate with the Architect/Prime Designer to establish design fee proposal to include SI tasks of the SER.

Design Phase

- Preparation of the Statement of Special Inspections.
- Coordination of Quality Assurance plans with Special Inspection.

Pre-Construction Phase

- Participate in Pre-construction meeting.
- Provide assistance in selection of Special Inspector.

Construction Phase

- Provide construction administration services as contracted under the design contract. Field reports shall be completed for all site visits, and submitted to the Architect.
- Review deficiencies found by the SI. The SER will determine ultimate acceptability of any deficiency.

### **Special Inspector**

#### Pre-design Phase

- Provide Owner or Designer an estimated fee to provide special inspections if requested.
- Attend Pre-construction meeting.

#### Construction Phase

- The SI shall provide all inspections outlined in the Statement of Special Inspections, except those performed by the SER. The SI may retain the services of other qualified Agents to conduct particular inspections and tests. The SI shall provide and distribute all field reports as agreed upon. Effort should be made not to duplicate inspections.
- Manage and coordinate efforts of special inspections.
- Adhere to reporting requirements.
- The SI shall immediately inform the Contractor of any deficiencies and inform the SER of deficiencies in a timely manner so as to remedy the deficiency.
- SI shall keep records of their time spent to review corrected deficiencies. Owner's special inspection costs incurred after identification of the initial deficiency will be reimbursed by the Contractor.
- During the phases of construction where special inspection is required, the SI shall attend monthly meetings.
- Submit reports to parties indicated.

### **Contractor**

#### Pre-construction Phase

- Review Chapter 17 of the IBC.
- Attend Pre-construction meeting.

#### Construction Phase

- Timely notification to SI for portion of work requiring inspection.
- If Quality Assurance plans for Seismic or Wind are required, Contractor has responsibilities as outlined in those plans. See Spec Section 014000 "Quality Requirements."
- Submit copy of approved shop drawings and submittals to SI.
- Correct deficiencies identified by the SI.
- For deficiencies requiring the judgment of the SER, the Contractor must not proceed with this work until a remedy has been worked out. The Contractor will be responsible for complete removal and replacement (and any related forensic costs) of any apparent deficiency that is not remedied by the SER.
- Provide access to and means for safe and proper inspection of work.

### **Independent Testing Lab**

#### Pre-construction Phase

- Attend Pre-construction meeting.

#### Construction Phase

- Provide tests as outlined in the contract specifications.
- May provide special inspections as an Agent to the SI.
- May provide special inspection services under contract directly with the Owner or Designer.
- Complete necessary reports and distribute to parties indicated.

## Documentation Requirements for Special Inspection and Distribution

Distribution may vary due to contractual requirements. Reports by the SI shall include the test standard utilized and how the field tests passed or failed according to standards. Inspection is subject to approval by the SER.

ACTIVITY	DOCUMENTATION REQUIRED	DISTRIBUTION
Field Inspection by Special Inspector or Agent of Special Inspector	Daily Report	*Contractor
	Discrepancy Notice	*Designer *SER *Contractor *Owner *Governing Agency
	Resolution of Discrepancy	*Same as Discrepancy Notice
Testing Event by ITL	Daily Report	*Special Inspector *Contractor *Owner *Designer *SER
Site Visit by SER	Field Observation Report	*Designer *Special Inspector *Contractor *Governing Agency *Owner

## STATEMENT OF SPECIAL INSPECTIONS

**PROJECT NUMBER AND TITLE:**

**MTTECH**

**LOCATION:**

**Butte, MT**

**ARCHITECT OF RECORD:**

**Martin Byrnes, A.I.A.**

**STRUCTURAL ENGINEER OF RECORD:**

**Kevin Feldman, P.E.**

**DESIGN PROFESSIONAL:**

**Tim Lannen**

In accordance to the International Building Code (IBC) 2009 Chapter 17, this Statement of Special Inspections is submitted. Attached is a Schedule of Special Inspection Services applicable to the above-referenced Project.

Requirements for Seismic Resistance are included:

No

Requirements for Wind Resistance are included

No

Disciplines involving special inspection: Structural ☒ Architectural ☒ Mech/Elect/Plumb ☒

Special Inspector (s) shall keep records of all inspections and furnish interim inspection reports to the governing agency and to the Design Professional monthly. Discrepancies shall be brought to the immediate attention of the Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the governing agency and the Design Professional prior to the completion of that phase of work. A Final Report of Special Inspections documenting required special inspections and corrections of any discrepancies noted in the inspections shall be submitted to the governing agency and the Design Professional at the conclusion of the project.

The Special Inspection program does not relieve the Contractor of the responsibility to comply with the Contract Documents. Jobsite safety and means and methods of construction are solely the responsibility of the Contractor.

Statement of Special Inspections Prepared by:

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Name (print)

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Signature

Date

Owner's Authorization:

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Signature

Date

Building Official Acceptance:

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Signature

Date

Item	Agency or Qualification	Frequency & Scope [P] Periodic, [C] Continuous	Completion Checked and initial by Special Inspector
Shallow Foundation/Subgrade Preparation	PE/GE	<ul style="list-style-type: none"> <li>- [P] Verify materials below foundations are adequate to achieve the design bearing capacity.</li> <li>- [P] Verify excavations are extended to proper depth and have reached proper material.</li> <li>- [P] Perform classification and testing of compacted fill materials</li> </ul>	<ul style="list-style-type: none"> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> </ul>
Rammed Aggregate Piers	PE/GE	<ul style="list-style-type: none"> <li>- [C] Verify compliance with contract documents</li> </ul>	<ul style="list-style-type: none"> <li>- <input type="checkbox"/></li> </ul>



**CAST-IN-PLACE CONCRETE**

Item	Agency or Qualification	Scope	Completion Checked and initial by Special Inspector
Reinforcement Installation	ACI-CCI ICC-RCSI- AWS	<ul style="list-style-type: none"> <li>- [C] Inspect size, spacing, cover, positioning and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters. (Field ACI 318 3.5, 7.1-7.7) except;</li> <li>- [P] Inspect for slabs-on –grade and elevated slabs size, spacing, cover, positioning and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters. (Field ACI 318 3.5, 7.1-7.7)</li> <li>- [P] Inspect weld and weldability of reinforcing steel other than ASTM A 706 (AWS D1.4 and ACI: Section 3.5.2)</li> </ul>	<ul style="list-style-type: none"> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> </ul>
Embed Plates	PE/SE	<ul style="list-style-type: none"> <li>- [C] Inspect size and positioning of embed plates and anchors. Inspect supplemental brace frame anchor reinforcing. Inspect concrete placement and consolidation around anchors.</li> </ul>	<ul style="list-style-type: none"> <li>- <input type="checkbox"/></li> </ul>
Concrete	ACI, ASTM, ICC	<ul style="list-style-type: none"> <li>- [C] Inspect concrete placement for proper application techniques ; except</li> <li>- [P] Inspect concrete placement of slabs-on-grade and elevated slabs for proper application techniques</li> <li>- [C] At time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete; except</li> <li>- [P]At time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete for slabs-on-grade and elevated slabs</li> <li>- [P] Verify use of required design mix</li> <li>- [P] Inspect formwork for shape, location and dimensions of concrete members being formed.</li> </ul>	<ul style="list-style-type: none"> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> </ul>

**ANCHORAGES**

Item	Agency or Qualification	Scope	Completion Checked and initial by Special Inspector
Material Verification	ACI, ICC, AISC	- [P] Concrete anchors should conform to approved construction documents. Any variations should be submitted by the contractor and approved by the SER.	- <input type="checkbox"/>
Application	PE/SE	- [C] Size, embedment, and positioning are to conform to construction documents. - [C] Installation procedure should be completed per manufacturer's guidelines.	- <input type="checkbox"/> - <input type="checkbox"/>

## STRUCTURAL STEEL

Item	Agency or Qualification	Scope	Completion Checked and initial by Special Inspector
Material Verification	ASTM,AISC	<ul style="list-style-type: none"> <li>- [P]Identify markings conform to AISC 360 and ASTM for structural steel</li> <li>- [P]Manufacturer's certified test reports</li> </ul>	<ul style="list-style-type: none"> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> </ul>
Welding	AWS-CWI	<ul style="list-style-type: none"> <li>- Verify weld material complies with AWS and approved construction documents.</li> <li>- Welds should be inspected to meet AWS D1.1</li> <li>- [C] Single pass fillet welds &gt;5/16"</li> <li>- [C] Complete and partial joint penetration. Plug and slot welds. Ultrasonic testing required.</li> <li>- [C] Multi-pass fillet welds</li> <li>- [P] Floor and deck welds</li> <li>- [P] Single pass fillet welds&lt; 5/16"</li> <li>- [P] Weld filler material</li> </ul>	<ul style="list-style-type: none"> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> </ul>
Shear Connectors	AWS/AISC – SSI	<ul style="list-style-type: none"> <li>- [P] Inspect size, number, positioning, and welding of shear connectors.</li> <li>- [P]Ring test all shear connectors with a three-pound hammer.</li> <li>- [P]Bend test all questionable studs to 15 degrees.</li> </ul>	<ul style="list-style-type: none"> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> </ul>
Bolts	ASTM, AISC	<ul style="list-style-type: none"> <li>- [P] Identify markings conform to ASTM standards specified in the approved construction documents</li> <li>- [P]Manufacturer's certified test reports</li> <li>- [P]Snug-tight joints</li> <li>- [P]Pretensioned and slip-critical joints using turn-of-nut with matchmaking, twist-off bolt or direct tension indicator methods of installation</li> </ul>	<ul style="list-style-type: none"> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> </ul>
Details	PE/SE	<ul style="list-style-type: none"> <li>- [P] Verification of steel frame joints to conform to construction documents.</li> <li>- [P] Member Locations</li> </ul>	<ul style="list-style-type: none"> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> </ul>

**COLD-FORMED STEEL**

Item	Agency or Qualification	Scope	Completion Checked and initial by Special Inspector
Material Verification	PE/SE	<ul style="list-style-type: none"> <li>- [P]Identify compliance with ASTM standards specified in project construction documents.</li> <li>- [P]Decking should be as indicated in construction documents.</li> <li>- [P]Manufacturer's certified test reports</li> </ul>	<ul style="list-style-type: none"> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> <li>- <input type="checkbox"/></li> </ul>
Metal Decking	PE/SE	<ul style="list-style-type: none"> <li>- [P]Inspect deck attachments to structural steel and side-lap fastening per manufacturer requirements.</li> </ul>	<ul style="list-style-type: none"> <li>- <input type="checkbox"/></li> </ul>

**Schedule Notes:**

1. The minimum qualifications shown are either one or the other per category (not all) unless otherwise stated. Materials testing shall be done by an Approved Testing Agency meeting the requirement of the IBC Section 1703 and ASTM – E329.
2. The design professional will also fill out the agencies to perform the special inspection with consent from the owner and coordination with the SER. In some instances it may be desirable to have more than one inspector for the same task.
3. The column indicating completion is be filled out by SI after inspection is completed for the last time and should contain initials of the SI and date.

## Special Inspector qualifications shown in Schedule of Special Inspections:

PE/SE Structural Engineer – a licensed SE or PE specializing in the design of building structures.  
PE/GE Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations.  
EIT Engineer In Training – a graduate engineer who has passed the Fundamentals of Engineering examination.

### **American Concrete Institute (ACI Certification)**

ACI-CFTT Concrete Field Testing Technician – Grade 1  
ACI-CCI Concrete Construction Inspector  
ACI-LTT Laboratory Testing Technician – Grade 1 & 2  
ACI-STT Strength Testing Technician

### **American Welding Society (AWS Certification)**

AWS-CWI Certified Welding Inspector  
AWS/AICS-SSI Certified Structural Steel Inspector

### **American Society of Non-Destructive Testing (ASNT) Certification**

ASNT Non-Destructive Testing Technician – Level II or III

### **International Code Council (ICC) Certification**

ICC-SMSI Structural Masonry Special Inspector  
ICC-SWSI Structural Steel and Welding Special Inspector  
ICC-SFSI Spray-Applied Fireproofing Special Inspector  
ICC-PCSI Prestressed Concrete Special Inspector  
ICC-RCSI Reinforced Concrete Special Inspector

### **National Institute for Certification in Engineering Technologies (NICET)**

NICET-CT Concrete Technician – Levels I, II, III & IV  
NICET-ST Soils Technician – Levels I, II, III & IV  
NICET-GET Geotechnical Engineering Technician – Levels I, II, III & IV

### **Exterior Design Institute (EDI) Certification**

EDI-EIFS EIFS Third Party Inspector

Note – Agencies may have other certifications. Certifications are listed as a general guide. If Inspecting Agencies are not certified, but have performed quality inspection on similar work, they are eligible to apply with the following requirement - attend a meeting with the Engineer of Record to review inspection at the cost of the inspecting agency.

## FINAL REPORT OF SPECIAL INSPECTIONS

**PROJECT NUMBER AND TITLE:** MTTECH NRRC

**LOCATION:** Butte, MT

**ARCHITECT OF RECORD:** Martin Byrnes, A.I.A.

**STRUCTURAL ENGINEER OF RECORD:** Kevin Feldman, P.E.

**DESIGN PROFESSIONAL:** Tim Lannen

To the best of my information, knowledge, and belief, I hereby state that the special inspections or testing required for this Project have been completed in accordance with the Contract Documents.

Interim reports submitted prior to this final report and numbered \_\_ to \_\_ form a basis for, and are to be part of this final report. The following discrepancies that were outstanding since the last interim report dated \_\_\_\_\_ have been corrected:

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(Attach continuation sheet(s) if required.)

Prepared by:

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Name (print)

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Signature

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Date